

Claims

1. A door opening and closing system in electric oven, the system comprising:

5 at least one latch provided at one side surface of a door;

10 a door interlocking structure having a rotary lever, a switch, and an elastic spring to sense opening and closing of the door, the rotary lever being pushed by the latch to rotate about one side, the switch sequentially contacting with the rotary lever, and the elastic spring allowing the rotary lever to be supported in one direction; and

15 a door locking structure having a motor, a rotary unit, and a latch guide unit, the motor being rotated after it is sensed that the door is closed by the door interlocking structure, the rotary unit being engaged with and rotated about a rotary shaft of the motor, and the latch guide unit being associated with the rotary unit to change a rotation motion of the rotary unit into a straight-line motion such
20 that the door is latched to the latch to prevent an erroneous opening of the door.

2. The system according to claim 1, wherein the rotary shaft has a noncircular shape and is inserted into the
25 rotary unit.

3. The system according to claim 1, further comprising:

30 at least one contact protrusion provided at a predetermined position of the rotary unit; and

at least one micro-switch provided at a corresponding position of the contact protrusion to indicate a motion position of the latch guide unit.

4. The system according to claim 1, further comprising:

a guide shaft protruded from one side of the latch guide unit; and

5 a guide shaft hole provided at the rotary unit, for inserting the guide shaft with a predetermined interval being intervened therebetween.

10 5. The system according to claim 1, wherein the motor, the rotary unit and the latch guide unit are layered up and down.

15 6. The system according to claim 1, further comprising: a latch hooking unit bent and angled with a length direction of the latch guide unit at the other end of the latch guide unit, for hooking the latch.

20 7. The system according to claim 1, further comprising: a guide unit provided at a body of the latch guide unit, for inserting a protrusion to guide a straight-line motion of the latch guide unit.

25 8. The system according to claim 1, further comprising a rotary guide protrusion extended from a body of the rotary lever toward the latch, for increasing a contact degree with the latch.

30 9. The system according to claim 1, further comprising: a step protrusion stepped at the other side of the rotary lever.

10. The system according to claim 1, further comprising: two switch contacts stepped at the other side of the rotary lever.

11. The system according to claim 1, further comprising:

two step switches provided at the other side of the rotary lever; and

two switch contacts provided at the switch, for sequentially operating by the step switch.

12. The system according to claim 1, wherein the switch is two micro-switches layered.

13. A door opening and closing system in electric oven, the system comprising:

a latch provided at one side surface of a door;

a first door opening and closing structure having a motor, a rotary unit, and a latch guide unit, the motor being rotated in both directions when the latch is inserted/released, the rotary unit being engaged to a rotary shaft of the motor to rotate at a predetermined angle, and the latch guide unit having one end inserted into the rotary unit at a predetermined position and the other end latched to the latch; and

a second door opening and closing structure provided at a position adjacent to the latch to indicate an opening and closing state of the door.

14. The system according to claim 13, further comprising:

at least one protrusion provided at a circumference of the rotary unit; and

at least one micro-switch provided at a corresponding position of the protrusion, for sensing a rotation degree of the rotary unit by using a displacement of the protrusion.

15. The system according to claim 13, wherein the first door opening and closing structure is closed after it is sensed that the door is closed by the second door opening and closing structure.

5

16. The system according to claim 13, wherein the first door opening and closing structure is closed when the electric oven performs a pyrolysis operation.

10

17. The system according to claim 13, wherein the motor, the rotary unit and the latch guide unit are associated with one another by each of bars extended vertically.

15

18. A door opening and closing system in electric oven, the system comprising:

a protrusion protruded from one side surface of a door;

20

a second door opening and closing structure having a rotary lever, a switch, and an elastic member, the rotary lever rotating in contact with the protrusion when the door is closed, the switch sequentially contacting with the rotary lever to perform a plurality of switching operations when the rotary lever is rotated, the elastic member applying one-direction elastic force to the rotary lever to indicate a position of the rotary lever; and

25

a first door opening and closing structure maintaining the door to be in a locking state after the door is closed by the second door opening and closing structure.

30

19. The system according to claim 18, further comprising: a rotary guide protrusion provided at one side of the rotary lever to be extended toward the protrusion.

20. The system according to claim 18, further

comprising: a step unit provided at a predetermined position of the rotary lever contacting with the switch.

5 21. The system according to claim 18, further comprising: a plurality of step switches provided at a predetermined position of the rotary lever contacting with the switch, for allowing the switch to perform a switching operation.

10 22. The system according to claim 18, wherein the switch has a monitor switch contact and a primary switch contact.

15 23. The system according to claim 18, wherein the switch is a plurality of micro-switch.

20 24. The system according to claim 18, wherein when all switches are switched on during a switching operation of the switch, it is sensed that the door is closed.